TERMITES COLLECTED BY T. T. CRAIG ON SOCORRO ISLAND

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In a recent note in this journal (1929) on the distribution of termites in Lower California, I pointed out that the six species known from that region are found also in California or Arizona. Through the kindness of Mr. T. T. Craig I have received for study three species of termites, collected by him in March 1928 on Socorro Island. Socorro Island lies in 18 degrees 45 minutes north latitude and 111 degrees west longitude, approximately three hundred miles nearly due south of the southern extremity of Lower California and some four hundred miles west of the coast of Mexico proper. While one of the species in this collection, *Kalotermes hubbardi* Banks, is found in Lower California, the other two seem to indicate a closer relation of the Socorro Island fauna to that of the mainland of Mexico. Small as this collection is, it furnishes very important information and provides another example of the extremely interesting finds awaiting the collector and student of termites in the Mexican region.

To insure correctness of identification in a region outside my previous experience, I sent the collection to Dr. T. E. Snyder of the United States Bureau of Entomology, well known authority on termites of the Americas, who confirmed my identification of the species represented as follows: *Kalotermes hubbardi* Banks; *Kalotermes jouteli* Banks; *Cryptotermes* sp. (a single dealate).

Mr. Craig's collections were made from mangrove logs in a dry wash near Braithwaite Bay, Socorro Island. His description (in lit.) of the vegetation of the island is of interest:

"The island—at least what I saw of it in my two hundred and five hours—is covered with a dense growth of brush, similar to the chapparal here at home, but about half again as high and many times more dense, unbelievably dense. It was, therefore, almost impossible to make any headway except by crawling in, under, and about the low mangrove trees that grow in the washes, very dry when I was there."

KALOTERMES HUBBARDI Banks

This record extends the range of *Kalotermes hubbardi* two hundred and fifty miles to the south of Cape San Lucas, where it was reported by Banks and Snyder (1920, Bulletin 108, United States National Museum) and in my recent note.

The present collection consists of a number of soldiers and nymphs. The soldiers are smaller than those commonly encountered, and certain other differences are apparent. Most striking of these are the greater length of the third antennal segment and the pronotum. These differences are brought out by the measurements and indices given below. Whether they represent anything more than the variation normal to the species can only be determined when more material is available for study.

Differences in size and proportion between a soldier of *Kalotermes hubbardi* Banks from Socorro Island, Mexico, and one from Phoenix, Arizona. Measurements in millimeters.

Measurement or Index	Socorro Island Specimen	Phoenix Specimen
Head width	1.61	1.76
Head length	1.83	2.10
Head index (head width divided by head length)	0.88	0.83
Mandible length	1.39	1.47
Mandible-head index (mandible length by head length)	0.76	0.69
Length of third antennal segment	0.62	0.57
Third antennal segment index (length of segment by head length)	0.35	0.27
Pronotum width	1.32	1.61
Minimum pronotum length	0.62	0.775
Maximum pronotum length	0.93	1.008
Pronotal index (maximum length by width)	0.56	0.626

KALOTERMES JOUTELI Banks

This large and interesting species was previously known only from the east coast of Mexico, southeastern Florida, and Cuba. Mr. Craig's collection of a single soldier on Socorro Island gives it a remarkable east and west range of some 1400 miles and makes it probable that it will be found throughout much of Mexico.

CRYPTOTERMES sp.

It seems unwise to attempt a specific identification of the single dealate *Cryptotermes* individual. It is particularly interesting, however, as representing the first record for the genus in western North America. Indeed the only record west of the eastern coast of Florida is that of a single specimen taken at Cotulla, Texas, which Banks has described (1920) as *Cryptotermes infumatus.*

NOTES ON TRICHOGRAMMA MINUTUM

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When newly deposited eggs of the orange Tortrix were parasitized by *Trichogramma* and placed in an incubator at about 80 degrees Fahrenheit, the adult parasites emerged eight to nine days later. The larvæ from unparasitized eggs emerged at the same time.

One female *Trichogramma* oviposited eight times within fifteen minutes. Less than seven hours later the movement of newly hatched *Trichogramma* larvæ could be observed within the eggs. Twenty-four hours after oviposition some of the larvæ measured .32 of a millimeter in length and .13 of a millimeter in width. About forty-eight hours after hatching, the larvæ were full grown. The appendages of the larva consist only of a pair of slender, curved mandibles, which are apparently functionless.

After the larva has ingested all of the contents of the host egg, it apparently voids liquid fecal matter which spreads in a thin film over the inner surface of the host egg shell, drying into white crystal-like particles. This excrement, as well as the egg shell, usually turns black just prior to the pupation of the parasites. The cause of this common phenomenon is not known.

If *Trichogramma* oviposits in an egg after the embryo is about three-fifths developed, the embryo is destroyed but the parasite rarely completes its development.

The parasite just before its emergence from the egg is positively phototropic since it cuts an exit hole on the side exposed to the strongest light.